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Stand reductions in corn due to fungal pathogens and insects

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INTEGRATED CROP MANAGEMENT

Stand reductions in corn due to fungal pathogens and insects

During the past week, numerous calls have come in about stand reduction in corn, especially fields planted during the last days of April and the first days of May. In many parts of the state, fields planted at that time were inundated with rain for a whole week, and many seeds and seedlings succumbed to seed rots and seedling diseases. Samples of seedlings received at the ISU Plant Disease Clinic have shown typical symptoms of seed rot or seedling blight on the roots and mesocotyl. Seeds that failed to germinate were rotted, sometimes as a result of insect injury.

Usually, a variety of fungi can be isolated from rotted seeds and it is not clear which fungus came first. Thus, it is rarely meaningful to attribute seed rot to a single fungus. Generally, *Pythium* and *Fusarium* species are considered to be the primary pathogens with many secondary invaders helping to finish the job.

These same two groups of fungi are also the ones most likely to kill seedlings after emergence, although *Penicillium* and *Diplodia* can frequently be primary pathogens, too. Although the fungi rotting the roots or mesocotyl can often be identified, the management approach does not depend on the fungal species involved. At this stage, the management options are less about disease management and more about the economics of replanting. One of the difficulties in a replant decision is determining how many plants will ultimately survive and contribute to yield. If seedlings show symptoms of wilting or leaf dieback and the nodal roots are not healthy and developing strongly, they probably will not survive or their development will be delayed so much that they will not be able to set acceptable ears.



These seeds failed to produce seedlings due to decay of the embryo tissue, which is now dark and soft. Decay was initiated from injury by seed corn maggots.

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Significant stand losses associated with wireworms were reported this week in several areas of the state. With the wet conditions that we are having, stand loss can often be due to a combination of insects and pathogenic fungi. It requires careful scouting to assess which is the primary problem in a given field. However, in either case, there really is no rescue treatment. More information on these issues can be found in *ICM newsletter* articles that appeared in April and May of this year.

In spite of all the rain, we have not had reports or seen anthracnose affecting seedling leaves. Anthracnose is expected to be present to some extent, but the cold weather is not

optimal for this fungus (*Colletotrichum graminicola*). Once the weather warms up, there may be a significant amount of anthracnose, but hopefully the plants will begin to grow rapidly enough that it will not affect their development.



These two seedlings appeared very weak in the field. Seminal roots and mesocotyl tissues are rotted and nodal roots are not developing.

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<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2001/6-4-2001/standredux.html>

Links:

[1] <http://www.ent.iastate.edu/imagegal/diptera/anthomyiidae/seedrot.html>

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